



Empowered by Innovation

**NEC***Integrated Network Management System**Easily Installed and Configured !**PC Base Network Manager*

# PC-MG

*Version 2.1*

## Technical Description

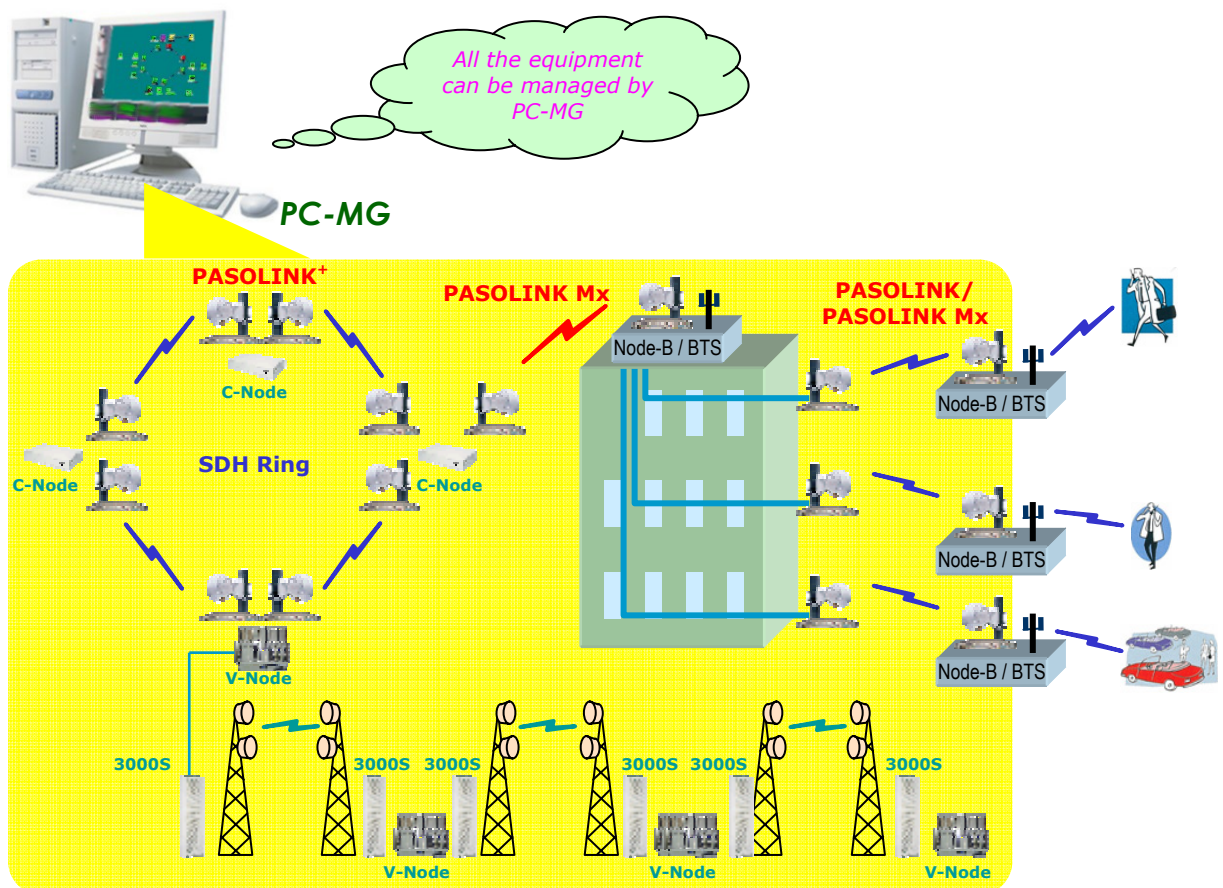


NEC Corporation

## Introduction

The **PC\_Base Network Management System (PC-MG)** is a secure distributed Network Management System which delivers real-time monitoring for your entire network. **PC-MG** uses the standard SNMP management protocol to poll equipment and servers over IP networks. A user-friendly graphical interface together with a set of integrated tools enables the network operators to remotely monitor and control the status and configuration of the entire network.

As a result, the **PC-MG** enables simple, comprehensive, easy-to-use and cost-effective management of your integrated microwave and optical network environment.



### ► Key Product Features:

- Automatic Alarms Monitoring
- Display NE by the icon classified by color for each alarm
- Starting-up of PNMT, CID and LCT by the double click of the icon on a Map View
- E-mail/Pager Event Notification
- Scalable, Distributed Architecture (Enterprise Edition)
- Live/Standby Servers with automatic failover (Enterprise Edition)
- JAVA\_Base Remote Access (Enterprise Edition)

## Fault (Event) Management

The **PC-MG** monitors the status of the all equipment's by way of polling mechanism. Detection of a status change or failure to report at one of NE's will result in a color change on the display (Tree view, MAP view and Event message respectively).

**Main Button Bar**

**Edit Button Bar**

**Selection Tool**

**Event Log Tool**

**History Event Tab (Show All Log)**

**Current Event Tab (Show Current Log)**

**Custom Event Tab (1 to 8)**

**View Window Area**

**<Color Category>**

|           |         |
|-----------|---------|
| Critical: | Red     |
| Major:    | Magenta |
| Minor:    | Yellow  |
| Normal:   | Green   |

### ► Finding the Map Object for an Event:

To show a submap view window containing the target object corresponding to an event, double click on an entry in a log view. The corresponding submap view will be displayed and set to a normal zoom level with the target object in the center of the view.

### ► System Privilege:

**PC-MG** has the following security levels for the users. Each user can have different access permissions, as described in the following table. You must have Supervisor permission to modify any user attributes.

| User Level              | Supervisor | Operator (Edit) | Operator | Observer |
|-------------------------|------------|-----------------|----------|----------|
| Alarm Monitoring        | ✓          | ✓               | ✓        | ✓        |
| Display NE Property     | ✓          | ✓               | ✓        |          |
| Display Event Filter    | ✓          | ✓               | ✓        |          |
| Start-up PNMT, CID, LCT | ✓          | ✓               | ✓        |          |
| Clear Event Log         | ✓          | ✓               |          |          |
| NE Registration/Edit    | ✓          | ✓               |          |          |
| Edit Event Filter       | ✓          |                 |          |          |
| Backup/Restore of DB    | ✓          |                 |          |          |

### ► User Registration:

If more than one person use the **PC-MG** system, you can create a separate user name for each person. Users can have different access levels and addressing information (E-mail, and/or Pager) for event notifications. The number of user which can be registered is unlimited.

You can set a password for all user names so that unauthorized persons cannot login to your system. Since **PC-MG** is a network service, any person who has an installed **PC-MG Remote Console** could easily login and modify your system.

### ► Domain Security:

You can restrict access for any **PC-MG** user to a subset of the map. When the restricted user logs on to the PC-MG Remote Console and/or JAVA Console, they will see the restricted view as if it was the top-level view. In all other respects, the console will operate in the same way.

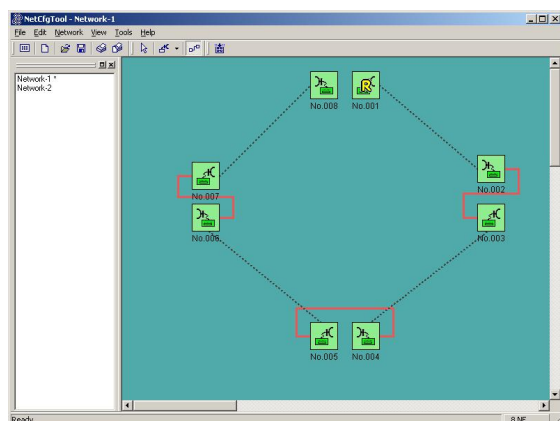
Each entry in the PC-MG event log includes a record number for the top-level Submap (Domain) that the related object is under. If you restrict a user view to a top-level submap, then the event views will also be properly filtered to just include events generated by objects under this top-level submap.

## NE Operation and Provisioning

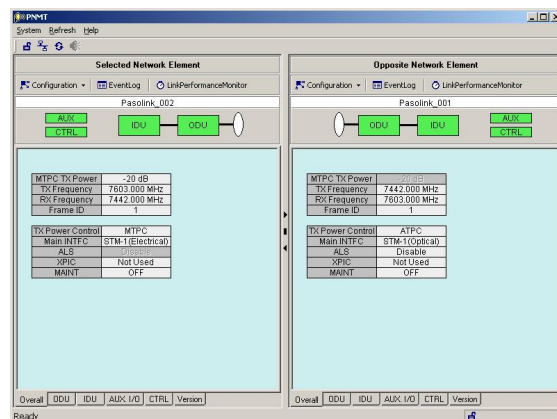
The **PC-MG** consists of following application software.

- SNMP Manager (Customized SNMPc)
- Network Configuration Tool for Pasolink Series
- Pasolink Network Management Terminal (PNMT)
- Craft Interface Device (CID) for C-Node / V-Node
- Local Craft Terminal for 3000S Radio (LCT-3000S)

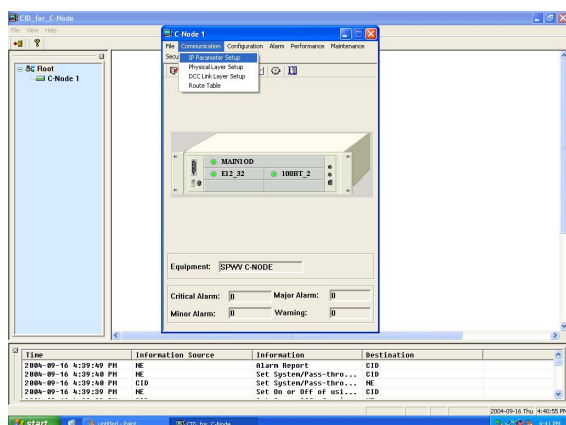
By double click on NE icon on the Map view, it starts the corresponding application to each NE automatically. **PC-MG** supports all functions of these application. Therefore, Intuitive Graphical User Interface (GUI) enables easy provisioning and control of various link-related parameters, and maintenance operation functions.



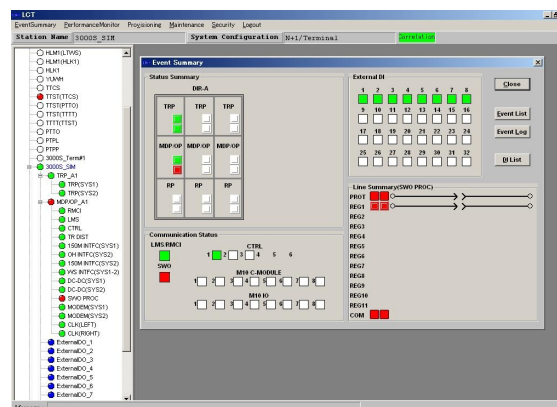
Net Configuration Tool



Pasolink Network Management Terminal (PNMT)



Craft Interface Device (CID) for C-Node



Local Craft Terminal (LCT) for 3000S

## System Overview

### ► Pasolink Family

**PC-MG** communicates with PASOLINK Management Card (PM Card) or CTRL Module equipped in the PASOLINK or PASOLINK+ and PASOLINK Mx equipment respectively.

The **PC-MG** is located at a central or a regional operation center and enables network operators to monitor and control the PASOLINK family network elements (NE's) remotely.

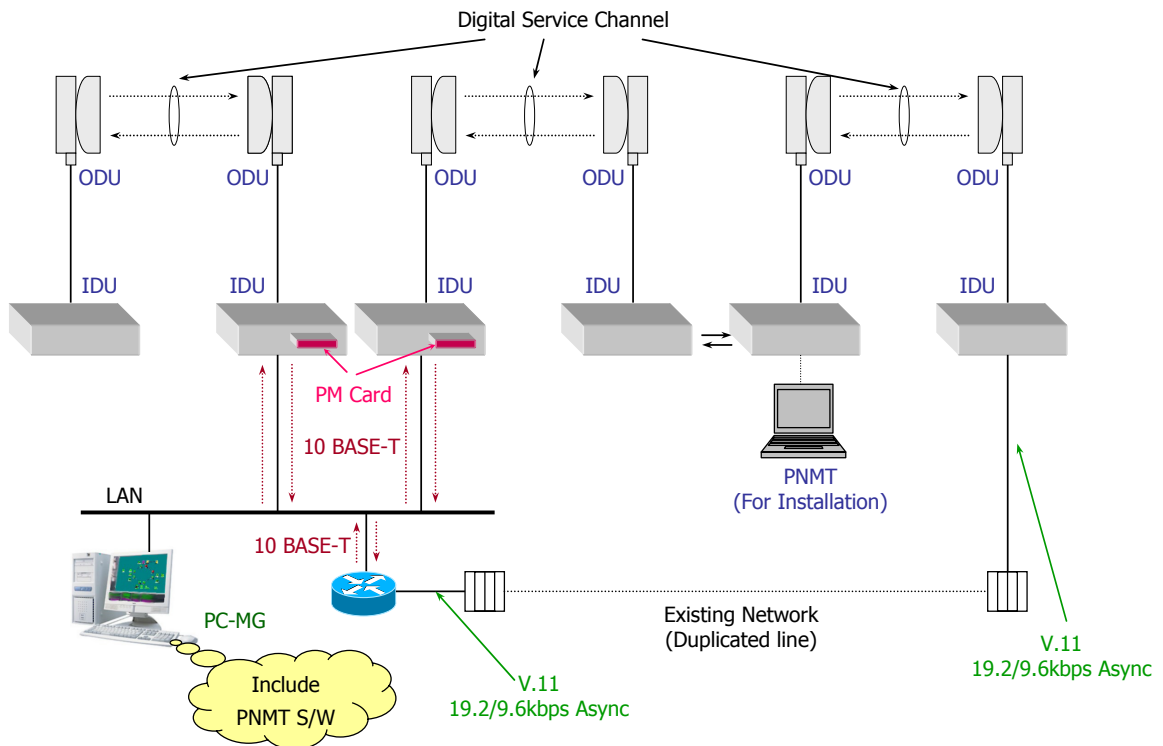
The PASOLINK family NE at the central site interfaces with the **PC-MG** through one of the following interfaces.

- 10BASE-T (LAN)
- V.11/RS-232C 19.2/9.6 kbps, Async (through Router)

The communication to the remote PASOLINK family NE is established through one of the digital service channels in the network.

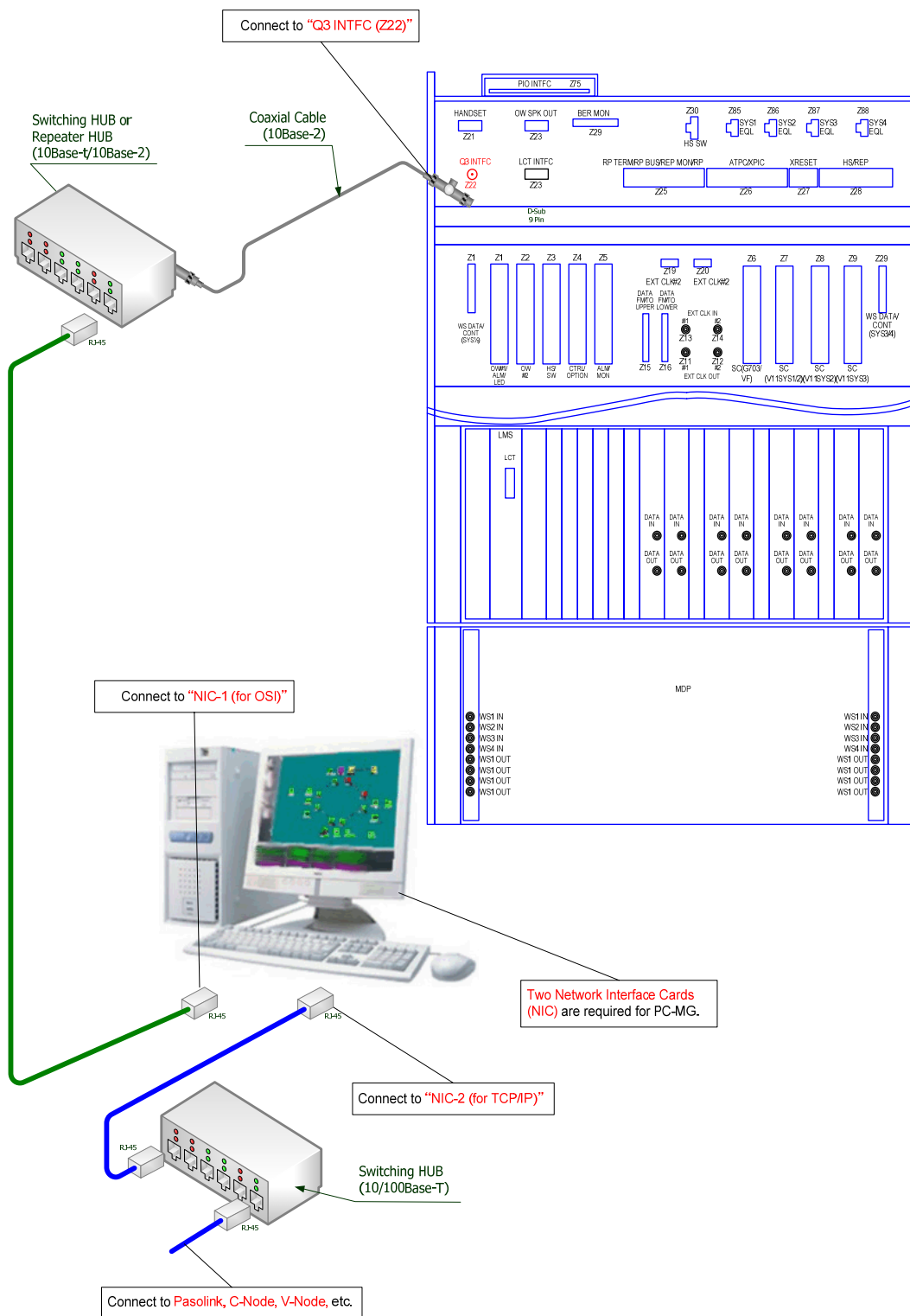


Pasolink Management Card (PM Card)





## ► Cable connection between PC-MG and 3000S Radio



## Product Options

**PC-MG Enterprise Edition** is the base system for a scalable multi-user environment. **PC-MG Enterprise Edition** includes the PC-MG Server license, Remote Console license, and Java Console license. Additionally, only Enterprise edition include live/standby server support.

**PC-MG Basic Edition** is a single user version for managing small to medium sized networks. All components run on a single system. The map database size is limited to 1000 objects. <sup>Note 1)</sup>

| Feature                    |               | Enterprise Edition                                | Basic Edition                         |
|----------------------------|---------------|---------------------------------------------------|---------------------------------------|
| Operating Systems          | Single-Server | Microsoft® Windows® XP [English version]          |                                       |
|                            | Multi-Server  | Microsoft® Windows® Server 2003 [English version] | N/A                                   |
| Device Limit               | Single-Server | Max. 5,000 objects <sup>Note 2)</sup>             | Max. 1,000 objects <sup>Note 2)</sup> |
|                            | Multi-Server  | Max. 25,000 objects                               | N/A                                   |
| Multi-Server Configuration |               | Yes                                               | No                                    |
| Live/Standby Server        |               | Yes                                               | No                                    |
| Java Console               |               | Yes (Unlimited) <sup>Note 3)</sup>                | No                                    |

Note 1) Objects means NE icon, Domain symbols, and lines which are displayed on the map.

Note 2) The number of the maximum devices which can be supervised is different with the kind of NE.

Note 3) In cases that using Operation System is Microsoft® Windows® XP, the number of the connectable consoles is ten(10) by EULA (End-User License Agreement) at the same time.

### ► Supported NEs [per One(1) Server]

| Kind of NE                                                      | Enterprise Edition | Basic Edition |
|-----------------------------------------------------------------|--------------------|---------------|
| Pasolink Family (Pasolink+, Pasolink V3, V4 and Mx)             | 5,000              | 1,000         |
| Optical Multiplexer (SDH) Family (C-Node, C-Node S1 and V-Node) | 256                | 64            |
| 3000S Radio Equipment                                           | 64                 | Not Support   |
| SNMP-Supported Devices (Router, Switch, etc.)                   | 5,000              | 1,000         |

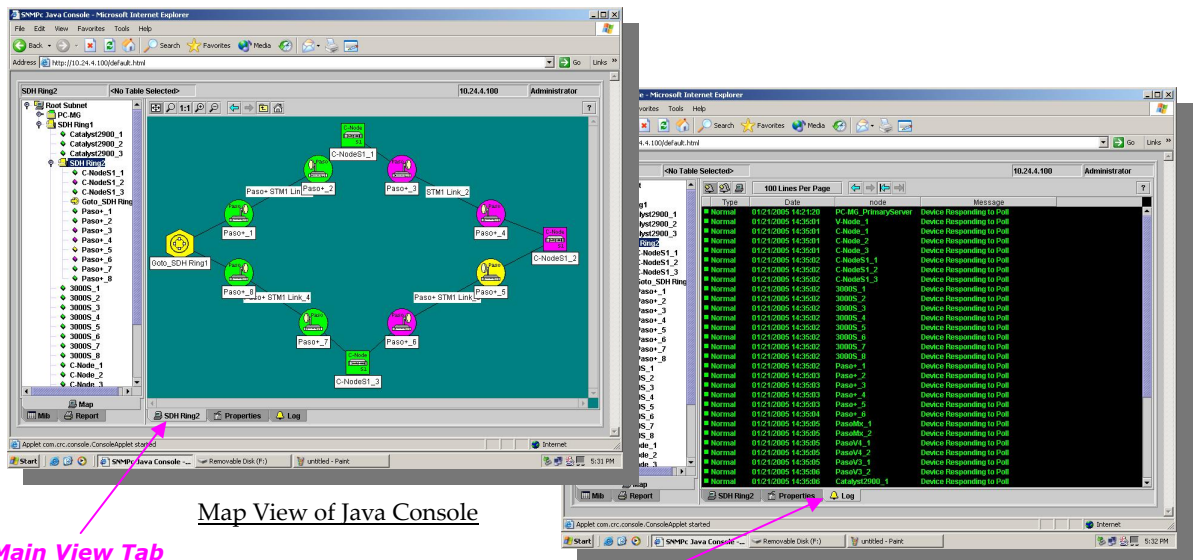
### ► Consoles

| Feature                       | Local Console | Remote Console | Java Console |
|-------------------------------|---------------|----------------|--------------|
| NE Registration               | Yes           | -              | -            |
| User Registration             | Yes           | Yes            | -            |
| Provisioning                  | Yes           | Yes            | -            |
| CID, PNMT, 3000-LCT Operation | Yes           | Yes            | -            |
| Security Management           | Yes           | Yes            | Yes          |
| Alarm Monitoring              | Yes           | Yes            | Yes          |
| Software Installation         | Necessary     | Necessary      | Unnecessary  |

## Console Options

### ► JAVA Console

The **PC-MG Enterprise** supports a JAVA base remote console. The **PC-MG Java Console** is optimized for low speed WAN lines, making it well suited for use by outsourced Network Service and Help Desk personnel. Basic functionality includes user specific topology map displays and event log views. Also included is a JAVA proxy Telnet application for configuration of routers, switches and other devices.



Map View of Java Console

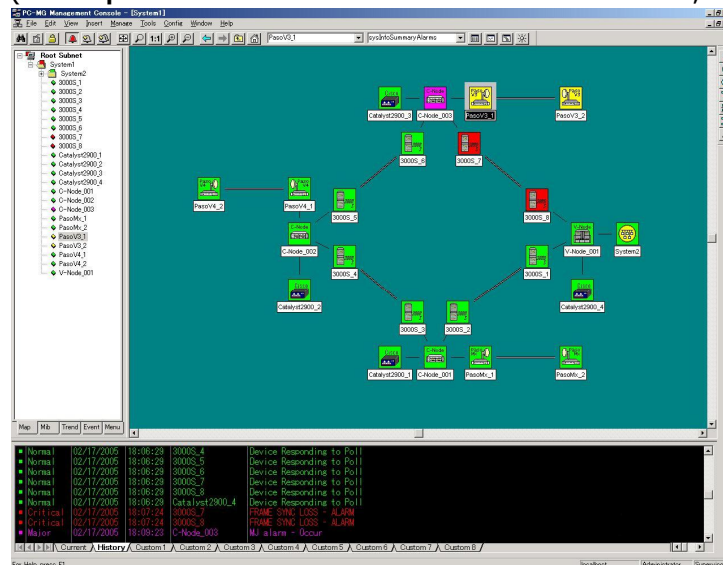
Click Main View Tab

Click Log View Tab

Log View of Java Console

### ► Remote Console

The **Remote Console** can be assigned a security level and unique view of the network. The remote console is not suitable for dial-up access as compared with the Java Console. The **Remote Console** is the same screen composition as the local console on the PC-MG server. Furthermore, PNMT, CID and LCT can be used by the double click of the icon on MAP view like the local console. (The **Expansion Set** is needed in cases that it uses PNMT, CID and LCT.)



Map View of Remote Console

## Scalability

### ► Multiple Login Consoles

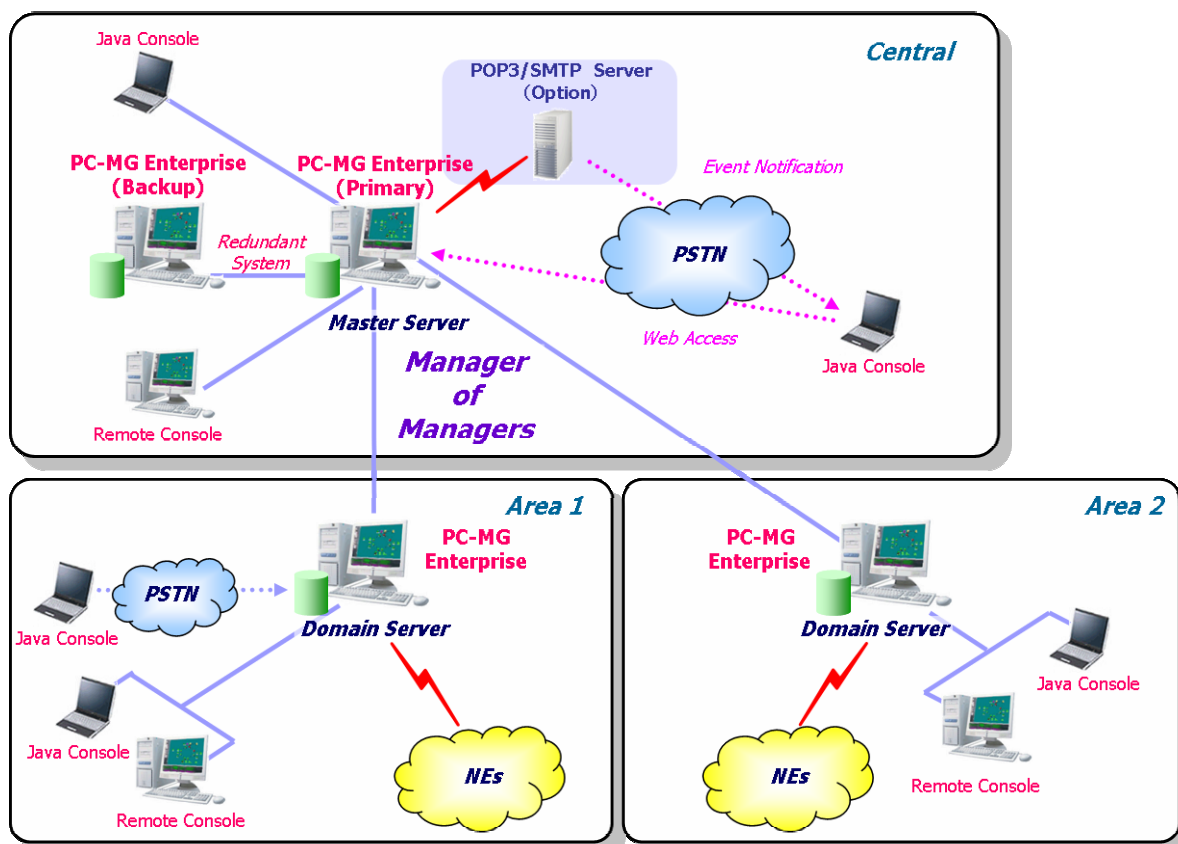
**PC-MG Enterprise** provides remote access consoles through JAVA (**Java Console**) or Windows based client software (**Remote Console**). Because Java Console is performing Web access of the HTML base, it is realizable of remote connection via PSTN.

Each remote user is assigned a security level and unique view of the network based on their user login. The ability to provide individual network views is useful in large corporate environments.



### ► Manager of Managers (Multi-Server System)

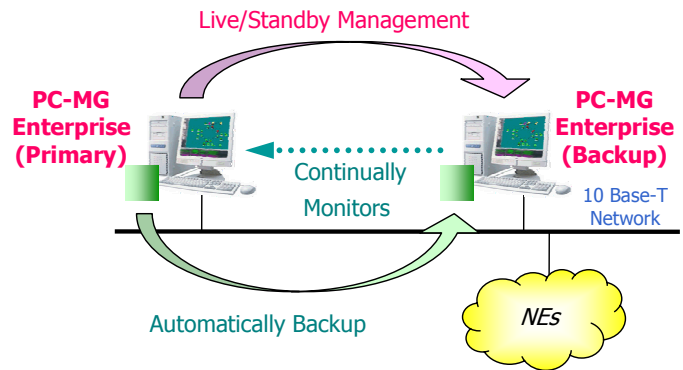
**PC-MG Enterprise** can be deployed as a hierarchical management system providing a single view for multiple area level PC-MG installations. A full peer-to-peer architecture is supported where each **PC-MG Enterprise** can be both area and top level manager simultaneously. This lets you to deploy a scalable fault tolerant management system. Accordingly, the maintenance can be operated and performed for each maintenance organization of the user.



### ► Live/Standby Servers

To ensure a reliable 24h/7days network monitoring solution **PC-MG Enterprise** supports live/standby management servers. The backup **PC-MG** server continually monitors the primary server and in the event of a failure automatically takes over all network management functions.

An automated failover process includes the reconfiguration of any distributed pollers in the network. Through the standby server feature, users can continue to monitor their network if the primary system is disabled through system failure, human error or other unforeseen circumstances.



### ► User Audit Trails

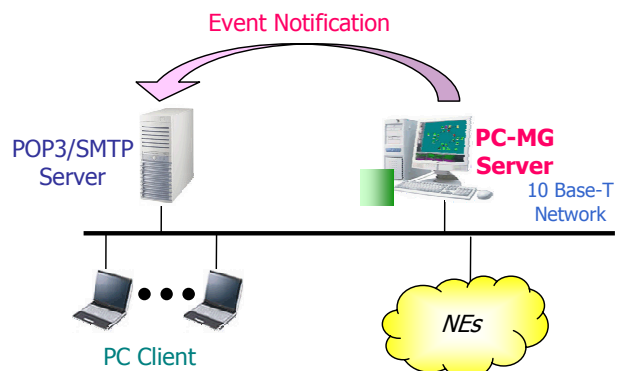
**PC-MG** delivers improved security and accountability through support for user audit trails. Any user access to the management platform or configuration changes are tracked and written to a log file. Alerts are automatically generated if an intrusion attempt is detected.

### ► Alerting

**PC-MG** changes the color of map objects and executes other actions based on received events. **Event Action Filters** select the action to take when an event occurs. An easy event filter option lets you to create event filters directly from log file entries. And also, **PC-MG** is able to integrate the network by the existing PNMS.

**PC-MG** offers a wide range of event actions including:

- Forward SNMP Trap to other SNMP Manager (Max. 10 Managers)
- E-mail, Pager Event Notification
- Run program
- Play WAV Sound
- Execute Application
- Pop-up Alarm Window



## Requirements & Product Options

### ► Product Options

| Product            | Details                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Edition      | Single server version for managing small to medium sized network. All components run on a single system and support one user. The map database size is limited to 1000 objects. This software includes Pasolink Plus and SpectralWave C-Node / C-Node S1 access license.                                                                                                        |
| Enterprise Edition | Base system for a scalable multi-server environment. Enterprise Edition includes the PC-MG Server license and Java Console functions. Additionally, only Enterprise edition includes <b>live/standby</b> server support and <b>Manager of Managers (Multi-Server System)</b> function. This software includes Pasolink Plus and SpectralWave C-Node / C-Node S1 access license. |

### ► Optional Software

| Optional Software                           | Remarks                                                                    |
|---------------------------------------------|----------------------------------------------------------------------------|
| 3000S Mediator S/W License (per NE)         | The case that supervises 3000S DMR is necessary. (Enterprise Edition only) |
| OSI Access S/W for 3000S                    | The case that supervises 3000S DMR is necessary. (Enterprise Edition only) |
| PC-MG Expansion Set for 3000S Radio         | The case that supervises 3000S DMR is necessary. (Enterprise Edition only) |
| PC-MG Expansion Set for SpectralWave V-Node | The case that supervises Spectral Wave V-Node / V-NodeS.                   |
| PC-MG Expansion Set for Pasolink NEO        | The case that supervises Pasolink NEO.                                     |
| PC-MG Expansion Set for Pasolink Mx         | The case that supervises Pasolink Mx.                                      |
| PC-MG Expansion Set for Pasolink V4         | The case that supervises Pasolink V4.                                      |
| PC-MG Expansion Set for Pasolink V3         | The case that supervises Pasolink V3.                                      |
| PC-MG Expansion Set for Pasolink-S          | The case that supervises Pasolink-S.                                       |
| PC-MG Expansion Set for MIU                 | The case that supervises MIU.                                              |

### ► PC-MG Requirements

| Parameter        |               | PC-MG Server                                      |               | Remote Console   |
|------------------|---------------|---------------------------------------------------|---------------|------------------|
|                  |               | Enterprise Edition                                | Basic Edition |                  |
| Computer Type    |               | Desktop PC                                        |               |                  |
| CPU              |               | Pentium 4 / 3.0 GHz or Higher                     |               |                  |
| Memory           |               | More than 1,024 MB                                |               | More than 256 MB |
| HDD Capacity     |               | More than 40 GB                                   |               | More than 20 GB  |
| Operating System | Single-Server | Microsoft® Windows® XP [English Version]          |               |                  |
|                  | Multi-Server  | Microsoft® Windows® Server 2003 [English Version] | N/A           | N/A              |
| Network          |               | One Ethernet (RJ45) <sup>Note 1)</sup>            |               |                  |
| Storage Devices  |               | CD-ROM drive                                      |               |                  |
| Monitors         |               | 17-inch color monitor (1,280 by 1,024 pixels)     |               |                  |

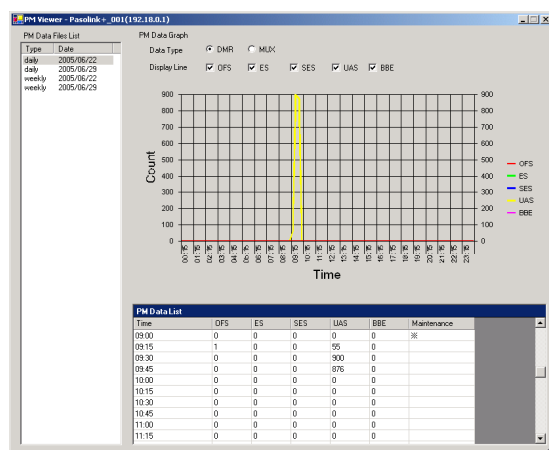
Note 1) In cases that PC-MG supervises 3000S Radio, two LAN ports are required.

## Functional Specifications

| Feature                               | Enterprise Edition                                                            | Basic Edition     |
|---------------------------------------|-------------------------------------------------------------------------------|-------------------|
| 1. Server System                      |                                                                               |                   |
| System Configuration                  | - Server-Client *<br>- Server-Multi Clients **<br>- Multi-Server-Multi-Client | Standalone System |
| Support Operator Terminals (Client)   | - Local Console<br>- Remote Console<br>- Java Console                         | Not Supported     |
| Number of Servers                     | Unlimited                                                                     | Only One (1)      |
| Number of Client                      | Up to Ten (10) Remote consoles.<br>Java Console does not have limitation.     | Not Available     |
| Hardware Platform                     | Desktop Computer (PC)                                                         |                   |
| 2. Integration with another NMS       |                                                                               |                   |
| Number of Upper NMS                   | Up to Ten (10)                                                                | Not Supported     |
| Protocol                              | SNMP, ODBC (Oracle, Access and SQL)                                           | -                 |
| Configuration Control                 | MIB Set                                                                       | -                 |
| 3. Graphical User Interface (GUI)     |                                                                               |                   |
| View of Network                       | Available                                                                     |                   |
| View of Equipment                     | Available                                                                     |                   |
| Background MAP                        | Available                                                                     |                   |
| Zoom in / Zoom Out                    | Available                                                                     |                   |
| Multiple Operation (Multiple Windows) | Available                                                                     |                   |
| Lock the Map View                     | Available                                                                     |                   |
| Auto Layout                           | Available                                                                     |                   |
| 4. Fault Management                   |                                                                               |                   |
| Communication Status                  | Available                                                                     |                   |
| Automatic Alarm Monitoring            | Available                                                                     |                   |
| Number of Current Events              | Up to 2G Byte (About 3,000,000)                                               |                   |
| Number of Log Events                  | Up to 2G Byte (About 3,000,000)                                               |                   |
| Log Data Format Selection             | Available (MM/DD/YYYY, DD/MM/YYYY or YYYY/MM/DD)                              |                   |
| House Keeping Alarm / Control         | Available (Using LCT-3000S, PNMT and CID Function)                            |                   |
| Switch Over Control / Status          | Available (Using LCT-3000S, PNMT and CID Function)                            |                   |

| Feature                        | Enterprise Edition                                    | Basic Edition |
|--------------------------------|-------------------------------------------------------|---------------|
| 5. Configuration Management    |                                                       |               |
| NE Provisioning                | Available<br>(Using LCT-3000S, PNMT and CID Function) |               |
| Graphic Editor                 | Available<br>(Using LCT-3000S, PNMT and CID Function) |               |
| Equipment (Unit) State         | Available<br>(Using LCT-3000S, PNMT and CID Function) |               |
| Termination Point State        | Available<br>(Using LCT-3000S, PNMT and CID Function) |               |
| External Point State           | Available<br>(Using LCT-3000S, PNMT and CID Function) |               |
| Equipment Protection           | Available<br>(Using LCT-3000S, PNMT and CID Function) |               |
| Radio Protection               | Available<br>(Using LCT-3000S and PNMT Function)      |               |
| 6. Security                    |                                                       |               |
| System Privilege               | Four (4) Levels                                       |               |
| User Group Registration        | Available (Unlimited)                                 |               |
| Own Server Monitoring          | Available<br>(Memory Usage, HDD, Capacity, etc.)      |               |
| Database Backup / Restore      | Automatic and Manual                                  |               |
| License Management             | Available<br>(Number of NE and NE Type)               |               |
| 7. Others                      |                                                       |               |
| E-mail Notification            | Available                                             |               |
| Pager Notification             | Available                                             |               |
| Play wave sound for each event | Available                                             |               |
| Run program for each event     | Available                                             |               |
| PM Graph View                  | Available for Pasolink Family *Note 1)                |               |

Note 1) PM Graph View for Pasolink



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